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NPIC/R-135/62
October 1962

PHOTOGRAPHIC INTERPRETATION REPORT

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ANTIMISSILE MISSILE ACTIVITY IN THE USSR

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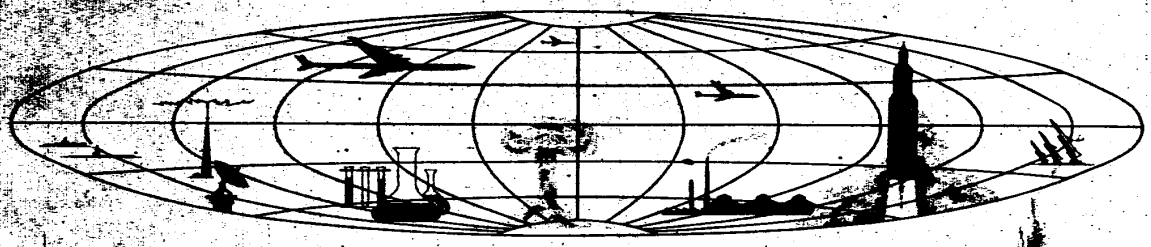

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PREFACE

This report has been prepared under NPIC Project JN-57/62 in answer to several requirements on possible antimissile missile (AMM) deployment activity as evidenced on KEYHOLE photography in selected areas of the USSR. Specifically, this report is concerned with identification of three complexes near Leningrad, and a comparison of these complexes with Launch Complex A in the Sary Shagan Antimissile Test Center (SSATC) and, in addition, with the possible identification of two sites near Chita.

Launch Complexes D, E, and F of the Tyura Tam Missile Test Center also were studied and compared with the above-mentioned installations to determine any similarities. However, no correlations could be made, and these complexes have since been identified as ICBM launch complexes (from recent KEYHOLE photography) and therefore will not be discussed in this report.

Also, new deployed SAM sites in the Tyura Tam and Kapustin Yar/ Vladimirovka Missile Test Centers and the Petropavlovsk and Plesetsk areas were also studied under NPIC Project JN-57/62 and are treated in a separate report (NPIC/R-123/62). These sites were found to be either an improved or a completely new system.

The comparison of the activity at the SSATC, Leningrad, and Chita, although they are geographically separated by many miles, was of great importance for study at this time because of the possible AMM connotations they exhibit. The SSATC has long been known to be associated with AMM research and development. The launch complexes near Leningrad resemble some of the facilities in the SSATC.

The mensural data contained in this report pertain to the major items of interest at the suspect launch sites and only those other features that are considered to be closely related to the launch sites or to the probable AMM system. The mensuration was derived from satellite photography using ephemeris data and from TALENT photography, where available. In addition, the most reliable maps were used to corroborate the base scales employed. The measurements assigned to buildings and other items of significance in this report are based primarily on interpretation of edge definition and should be regarded as approximate only.

The discussion and detail in this report, which reflect information available as of 1 August 1962, have been restricted mainly to the probable AMM launch complexes and other facilities that appear to be closely associated with the operation and/or function of AMM activity. The administrative, support, and storage facilities associated with these complexes are either briefly discussed or are shown only on accompanying maps.

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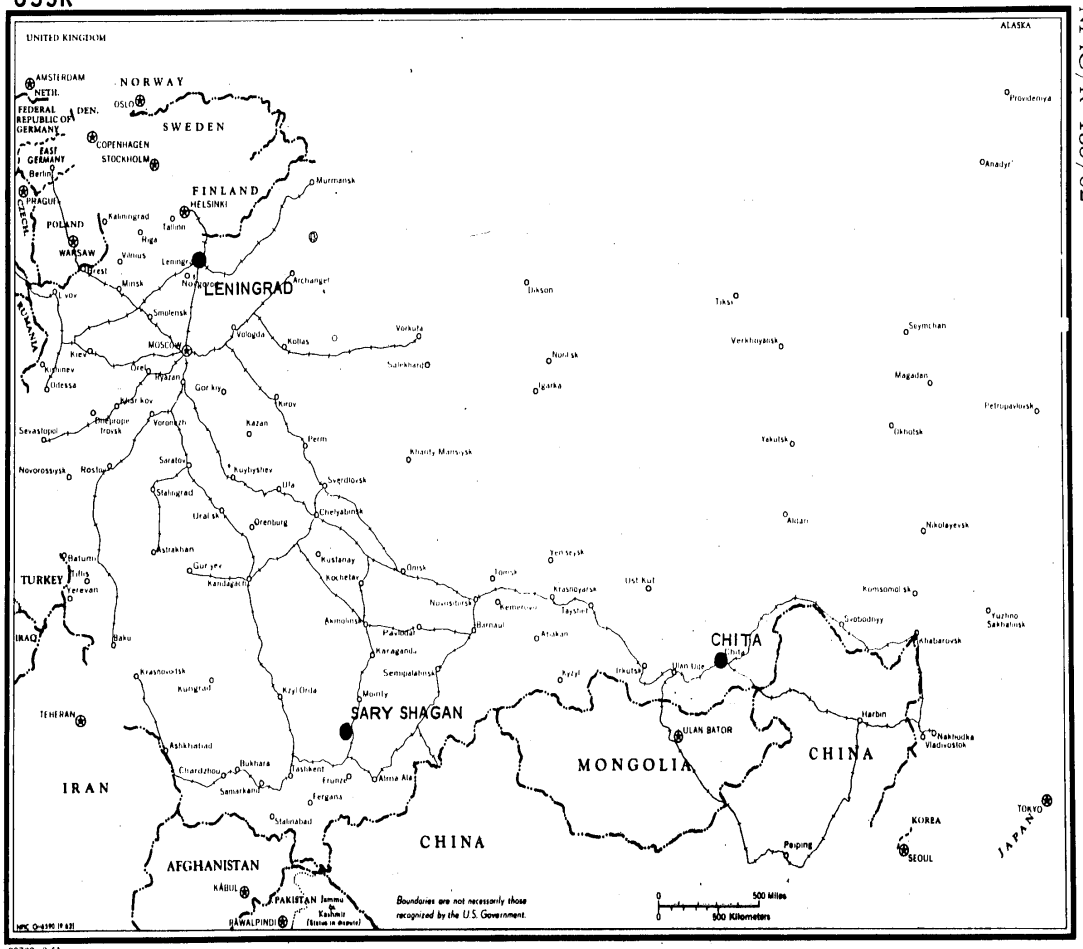

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FIGURE 1. AREA ORIENTATION MAP.

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SUMMARY AND CONCLUSIONS

A comprehensive photographic study of the AMM research and development areas of the SSATC and the three hithereto unidentified complexes 1/ 2/ in the Leningrad area (Figure 1) reveals that the USSR has probably developed and deployed a new type of SAM launch system with an antimissile capability.

As a result of this study, the three complexes in the Leningrad area have been identified as probable AMM launch complexes. These are the first deployed probable AMM complexes in the USSR observed on photography. It is estimated that construction of these three complexes was started late in 1960. The completion date of external facilities is estimated at late 1962 or early 1963, indicating a construction period of approximately 2 to 2 1/2 years. This estimate does not take into consideration those internal features necessary to make the sites operational.

Analysis of the sites, the launch positions, and associated activity found at the Leningrad launch complexes indicates that they probably represent a fixed instead of a mobile system. The evidence for this statement is as follows:

The Leningrad sites are similar to two "fixed" sites (Sites 5 and 6) in Launch Complex A of the SSATC.

The probable electronics facilities at the Leningrad launch complexes are similar to fixed electronics Site C in Launch Complex A of the SSATC.

The Leningrad complexes appear to be appropriately positioned for defense against offensive missiles with respect to possible avenues of approach.

The launch positions do not appear to be of the "open," unprotected type, as is evidenced in mobile systems.

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At least one other system, or a system modification, is under development at Launch Complex A, SSATC -- at Sites 3 and 4. In site pattern, launch positions, and type of associated equipment, the sites are different from any of the above-mentioned sites and from any sites in known Soviet SAM systems. The site appearance and equipment observed tend to indicate development of a mobile system or a mobile version of a fixed system. Sites 3 and 4 closely resemble the pair of possible AMM sites observed near the [redacted] 6X2

Although a complete prototype launch site is not present at the SSATC, research and development for the Leningrad Probable AMM Launch Complexes appear to have been conducted at launch positions at Launch Sites 5 and 6 in Launch Complex A, which are actually segments of the Leningrad-type launch sites, and which were probably completed in [redacted] The reasons for the absence of a complete prototype at Launch Complex A, SSATC, may be the following:

Information on site design could probably have been gained through research and development, and therefore only a "fixed"-type missile-hold and launch position configuration would have had to be developed.

Study of the performance of a site segment could have made possible the initiation of design and deployment without having had a complete prototype.

If deployed sites were to utilize a missile similar to the Guideline or an improved Guideline, only development of the missile-hold and launch position "concept" would be necessary in the R & D phases, and hence, only a site segment would be needed for testing.

The long linear pattern of probable electronics facilities found at the three Leningrad Launch Complexes are similar to Electronics Site C at Launch Complex A, SSATC, and this latter site was the probable prototype

*The illustration of the sites at Semipalatinsk has been added at this time only to show this similarity. No additional detail or description concerning this site will be included in this report. These sites are now under study at NPIC and a report concerning them will be issued upon completion.

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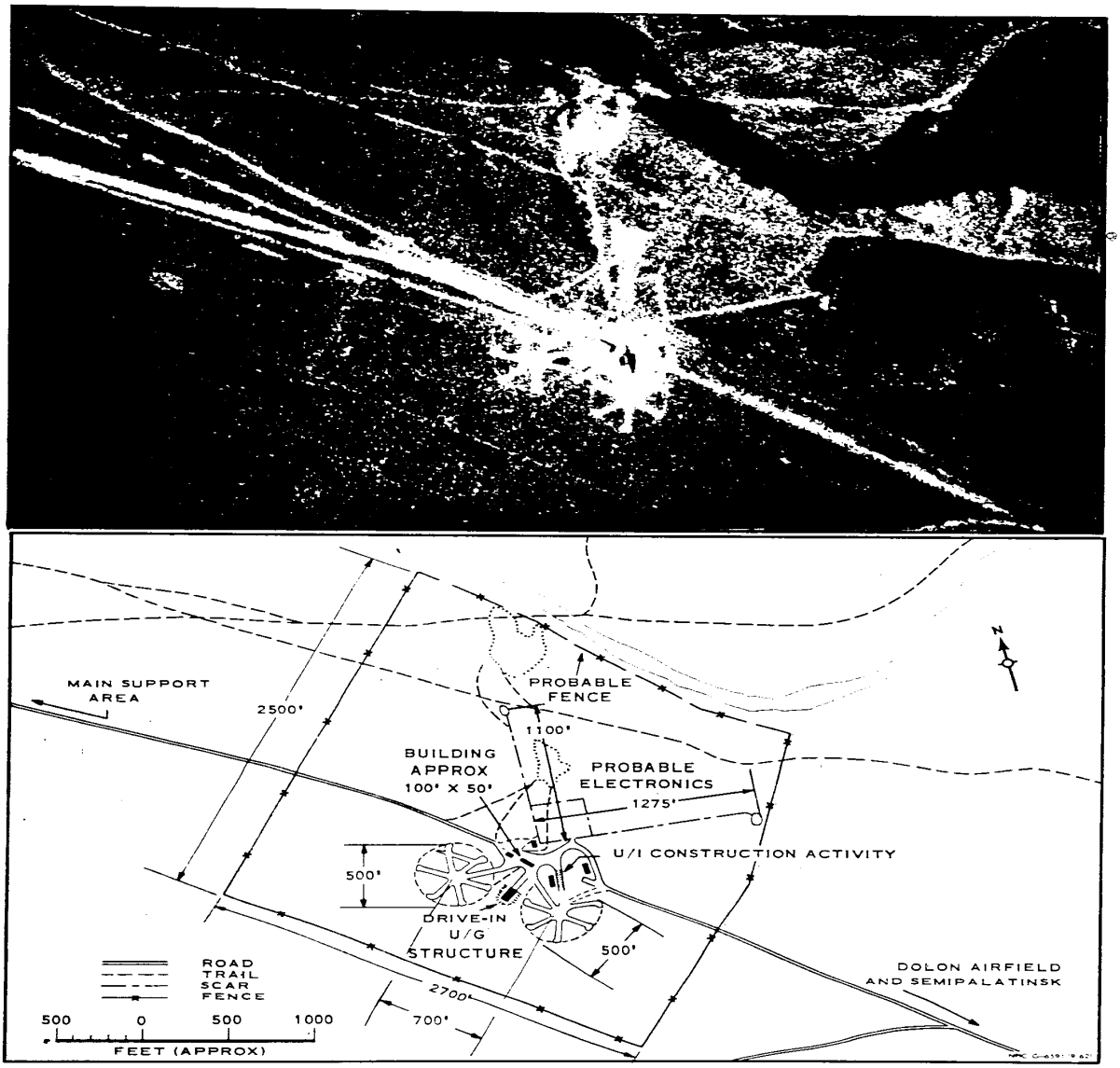

FIGURE 2. POSSIBLE AMM LAUNCH AREA, SEMIPALATINSK.

for the deployed sites. The Leningrad probable electronics facilities appear to be a somewhat "hardened" version of that observed at Sary Shagan in that the probable central control building appears to be semiburied.

The possible mode of operation for the Leningrad sites and Launch Sites 5 and 6, SSATC, is not clearly defined at this time. However, based on the available data, several hypotheses have been considered, two of which are as follows:

a. A launch position consists of a building which doubles as a missile-hold and a launch structure - the missile would be launched from the building and the resultant blast would be deflected into the wedge-shaped area between the building and the center of the site.

b. A launch position consists of a missile-hold building capable of holding two or more missiles and a revetment-protected launch pad outside of and away from the building. Under this alternative the missile would move by some means to a launch pad.

Figures 3 and 4 illustrate the launch position and launch site as seen at Leningrad and Sary Shagan showing the missile hold/launch building and associated wedge-shaped area. Figure 3 shows that six launch positions similar to that found at Launch Site 6, SSATC, placed side-by-side in a circular pattern, would create a launch site similar to those found at Leningrad. With the addition of revetments between the launch positions, a central revetted structure, and a circular service road, a "typical" Leningrad site would emerge from this pattern. Figure 4 is a perspective of a portion of a Leningrad site. Except for revetments, the launch position is similar to that found at Site 6, Launch Complex A, SSATC. This drawing could also represent a launch position for any of the Leningrad complexes.

The probable steps of development of the launch activity at Launch Complex A, SSATC, are as follows:

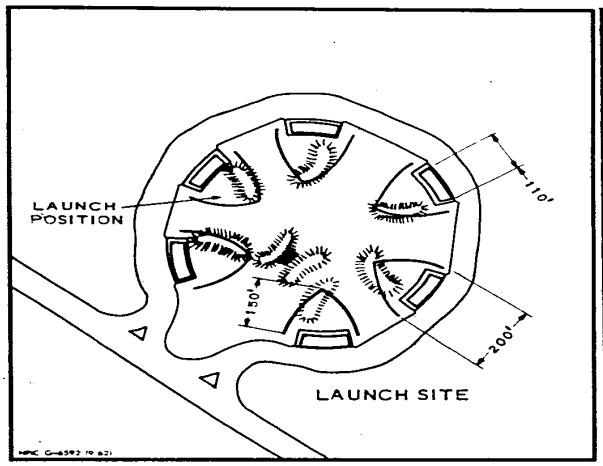

FIGURE 3. TYPICAL LENINGRAD-TYPE LAUNCH SITE WITH OVERLAY OF SARY SHAGAN-TYPE LAUNCH POSITIONS.

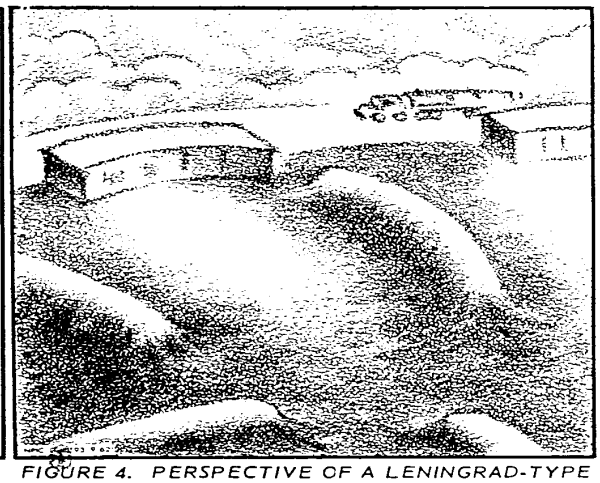

FIGURE 4. PERSPECTIVE OF A LENINGRAD-TYPE LAUNCH POSITION.

a. Sites similar to SA-2 sites were constructed and used for capability and feasibility studies of the best Soviet SAM system against some of their own offensive systems.

b. Launch Sites 5 and 6 represent either an improved system or a completely new system that evolved from studies possibly based on tests at Sites 1 and 2. Site 5 probably represents construction and test of equipment for a segment (missile-hold building and launch pad) of a new launch concept. Site 6 is essentially the same as Site 5, except that the missile-hold building and the launch pad have been reshaped. The building is bowed and the launch area is wedged-shaped, as if to allow a flow of activity from the bowed building to come to a common point on a probable launch pad. Sites 5 and 6 seem to represent either development or prototypes of the launch position or site segment seen at the Leningrad launch complexes.

c. Launch Sites 3 and 4 are different from Sites 1, 2, 5, and 6 and

the Leningrad sites. This pair of launch sites probably reflects the development of a new missile system.

d. The time period in which the missile storage and checkout facility was expanded coincides with the construction activity at Launch Sites 3 and 4. This timing illustrates either concurrence or coincidence because either this annex to the storage area is in support of the new sites (3 and 4), or it is intended to support increased activity at Sites 1, 2, 5, and 6, as well as Sites 3 and 4. 25X1B

25X1B

[redacted]

LAUNCH COMPLEX A
SARY SHAGAN ANTIMISSILE TEST CENTER

Launch Complex A is located at 46-23N 72-52E, approximately 30 nautical miles (nm) northwest of the Support Base of the test center (Figure 5). To provide the detailed description and comparisons given below, all reports and available photography [redacted] covering the complex were studied. 25X1D

This complex consists of three integral areas: the Launch Area, the Missile Storage and Checkout Area, and the Administration and Support Area (Figure 5). Only the Launch Area with its associated electronics sites and the Missile Storage and Checkout Area are discussed and illustrated in this report. Detailed descriptions of these areas as interpreted from current photography provide a basis for comparison of this complex with the sites in the Leningrad area.

The launch site numbers, as assigned for this complex, are strictly arbitrary designations and do not reflect steps of development within the complex. Some of the site designations are the same as in previous reports, 4/, 5/, 6/ but others previously used have been changed to conform with new identifications made possible by additional, cloud-free, good quality photographic coverage.

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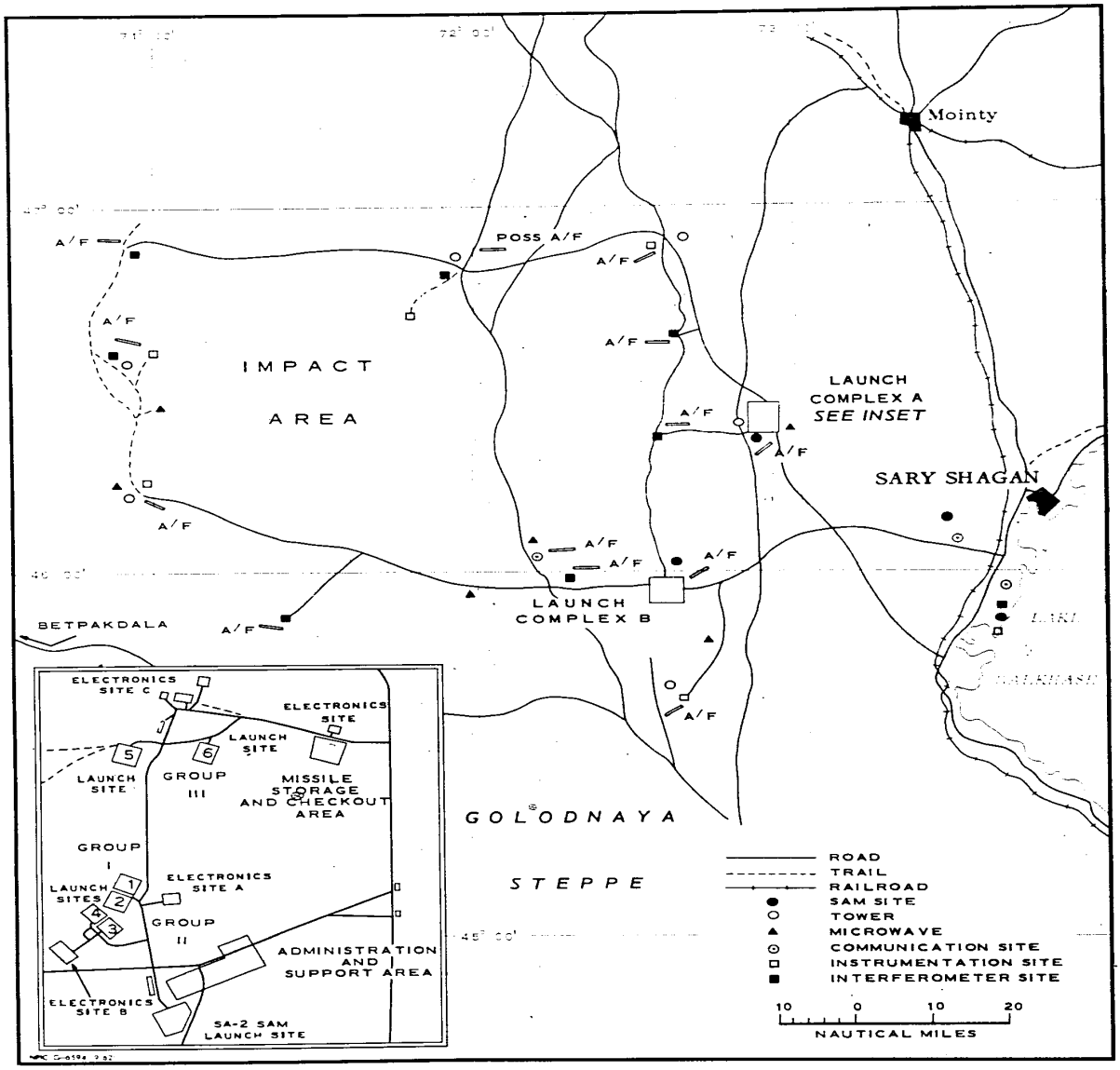

FIGURE 5. LAUNCH COMPLEX A, SSATC.

Launch Area

The Launch Area (Figure 5) contains 6 launch sites distributed in 3 groups of 2 sites, each group having an associated electronics site. Group I has two 6-position launch sites (Sites 1 and 2) similar to SA-2 SAM sites. It is served by Electronics Site A. Group II has two 6-position launch sites (Sites 3 and 4) of a type previously unobserved in the Sino-Soviet Bloc (except at Semipalatinsk). Associated with this group is Electronics Site B. Group III contains two separately fenced but similar launch sites (Sites 5 and 6), one with three launch positions and the other with two. Electronics Site C is associated with this group. A total of 29 launch positions have been identified at these six launch sites.

25X1D

25X1D

The chronological chain of development of the launch area and associated activity was traced and analyzed from all available photography (the [redacted] -- [redacted] -- and [redacted] KEYHOLE missions). KEYHOLE photography of [redacted] provided the best coverage of the launch complex and was used extensively in the detailed interpretation. Table 1 briefly outlines the development of the complex as interpreted from the [redacted] photographic coverages.

25X1D

25X1D

25X1D

25X1D

Launch Group I

This group is approximately 7,000 feet northwest of the Administration and Support Area. It includes a pair of launch sites (Sites 1 and 2) and the associated Electronics Site A (Figure 6).

Launch Sites 1 and 2. These sites are approximately the same size, and each appears to be almost a mirror image of the other. They closely resemble the fan-configured sites of the SA-2 SAM launch system. Among the similarities to known SA-2 SAM sites are the six launch positions, drive-through launch positions (revetments are not discernible), a centrally

25X1D

Table 1. Chronological Development of Launch Sites and Associated Facilities at Launch Complex A.
(Status as of Mission and Date Indicated.)

Item	[redacted]					
Launch Sites 1 & 2	Complete or nearly complete	Probably complete	Complete	Active; no change	Active; no change	No apparent change (small scale)
Electronics Site A	No evidence	Complete or nearly complete	Probably complete	Complete	Active; no change	No apparent change
Launch Sites 3 & 4	No evidence	Under construction	Under construction	Under construction	Complete or nearly complete	No apparent change
Electronics Site B	No evidence	Under construction	Complete or nearly complete	Probably complete	Active; no change	No apparent change
Launch Sites 5 & 6	Complete or nearly complete	Probably complete	Complete	Complete	Complete	No apparent change
Electronics Site C	Complete or in final stages	Appeared complete	Complete	Complete	Complete	No apparent change
Missile Storage and Checkout Area	West Section complete	No change in West Section; East Section under construction	Probably complete	Complete	Active; no change	No apparent change
Deployed SA-2 SAM Launch Site	No evidence	Complete and probably operational	No change	No change	No change	No apparent change

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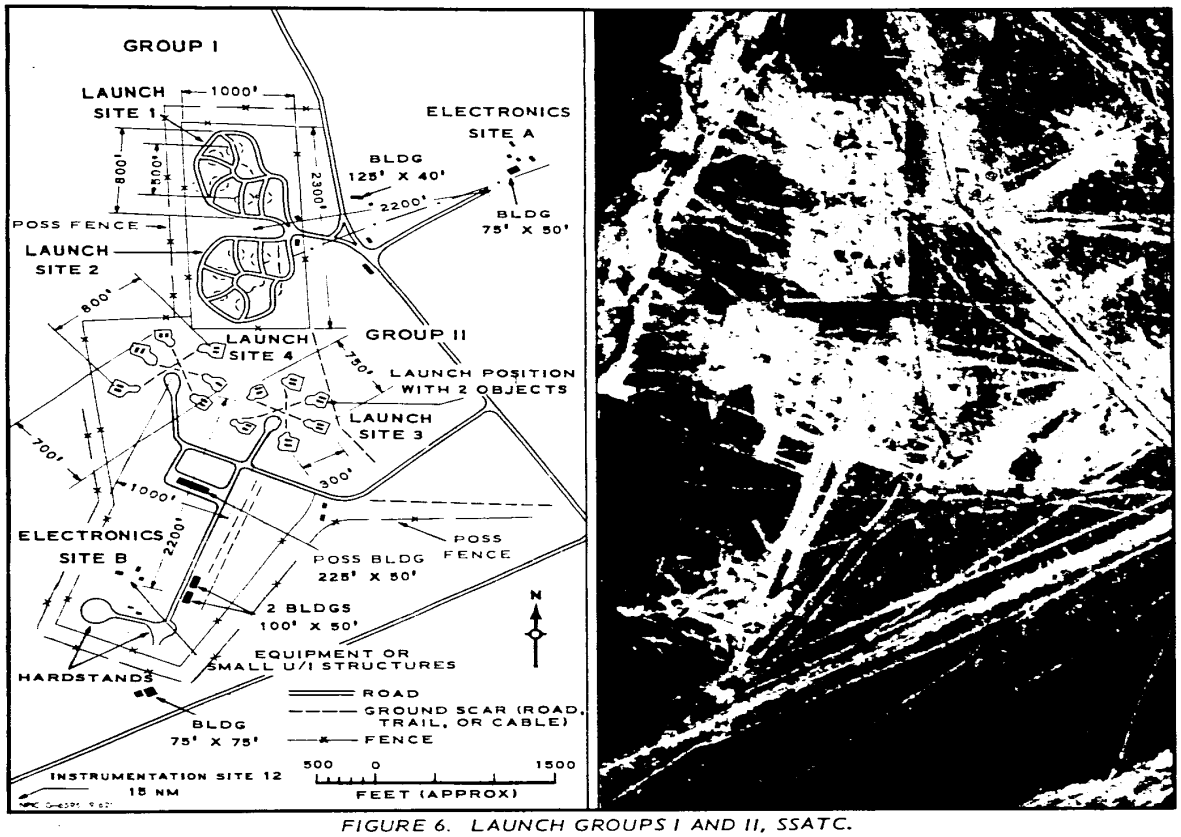

FIGURE 6. LAUNCH GROUPS I AND II, SSATC.

located guidance revetment, and an encircling service road with short roads between it and the launch positions.

At both sites the diameter of the outer service road is 800 feet, and the distance across the site from launch position to launch position is 500 feet. Ground scarring prevents determination of the exact placement and size of all launch positions and of whether revetments are present at all positions. Comparison with the deployed SA-2 launch site in the Administration and Housing Area, at which clearly defined revetments are visible,

indicates that possibly only launch pads are present in Sites 1 and 2. A line perpendicular to one between the centers of the two sites is oriented on an azimuth of approximately 295 degrees.

Both sites are within a rectangular area (2,300 by 1,000 feet) enclosed by a fence. A possible second fence partially visible outside this fence indicates that the security of these sites may be combined with that of Sites 3 and 4. Two small probable security buildings are near the entrance to the sites.

Electronics Site A. This site, in a relatively small area 2,200 feet east-southeast of Sites 1 and 2, is connected directly to Sites 1 and 2 by road and probably by buried cable. The site contains one building 75 by 50 feet, one smaller building, and three or four other buildings or pieces of equipment.

Launch Group II

This group lies approximately 8,000 feet west of the Administration and Support Area and just southwest of Launch Sites 1 and 2 (Figure 6). It consists of a pair of similar launch sites (Sites 3 and 4) and an associated electronics site (Site B).

Launch Sites 3 and 4 are different from any other sites observed to date in the Sino-Soviet Bloc (except the pair of possible AMM sites near the [redacted] Both sites are generally circular and have six launch positions with a central revetted area. Electronics Site B, 2,200 feet to the southwest, probably serves both sites. These sites differ from Sites 1 and 2 and from SA-2 SAM sites in the following respects:

25X2

No clearly defined site configuration or internal service-road system is discernible.

The launch positions are not of the drive-through type and do not appear revetted.

The unidentified objects at the launch positions appear to be deployed in pairs (where clearly visible) and are not lined up to conform with any "typical" orientation, for they face in many different directions. One salient feature is the unusual radial pattern, probably formed by cable trays or buried cables connecting the launch positions and intersecting in the center of the site, where the "spokes" form a clearly defined triangle. A circular revetment is adjacent to the triangle. Both sites appeared to be complete and active on photography of [redacted] 25X1D 25X1D

A perpendicular bisector of a line drawn through the center of the sites has an azimuthal orientation of 245 degrees.

The two launch sites and the electronics site appear to be enclosed by one and possibly two fences. The inner fence is more clearly defined. It cannot be traced completely because of track activity, but appears to be connected to the inner fence of Sites 1 and 2. Just beyond and parallel to the inner fence but only partially visible because of trackage is a possible fence or firebreak or fence-firebreak combination. Two probable security buildings are visible near the entrance to the sites.

Launch Site 3. All the activity at this site appears to be more evenly distributed than at Site 4. Although the site limits are not clearly defined, the distance across the site from launch position to launch position is approximately 750 feet. Each launch position has a "Coke-bottle" shape (125 by 50 feet overall), with the "top" generally facing the center of the site. A pair of unidentified objects approximately 50 by 20 feet is located in the "bottom" or outward part of the position. These objects appear "clean" i.e., they have a smooth surface and are parallel to each other and to the ground plane. The distance between each launch position cannot be exactly determined; it seems to vary mainly because of the different attitudes of the objects along the outside of the site. The central circular revetment, 150 feet in diameter, appeared to be active and to contain unidentified equipment on the [redacted]

25X1D

25X1D

Launch Site 4. The major differences between this site and Launch Site 3 are that it is slightly more irregular in size and shape, all its launch positions do not contain the same number of unidentified objects, and, on the photography of [redacted] the central revetted area appeared to be more active.

The distance across the site between launch positions varies from 700 to 800 feet. The launch positions and the various attitudes of the objects in them appear similar to those at Launch Site 3. However, the spacing of the positions is different (one appears to be apart from the others). Also, the objects do not have the same "clean" appearance as those at Launch Site 3. They are about the same size but appear slightly irregular in shape. Their exact shape and configuration cannot be determined because of the small scale of the photography.

Electronics Site B. The site is situated approximately 2,200 feet southwest of Sites 3 and 4 (the same distance as from Electronics Site A to Sites 1 and 2). The site is generally L-shaped and connected to Sites 3 and 4 by a good-surfaced road and probably by a buried cable. Three buildings and various pieces of probable equipment are visible. Two of the buildings, 100 by 50 feet, are located along one leg of the L. The third building, approximately 75 feet square, is located approximately 600 feet from the corner of the L but is connected to it by road and probably by a buried cable. Two hardstands, one at the corner and the other at the northern end of the L, contain most of the probable equipment mentioned above. Except for being arranged in groups, this equipment does not appear to have any special pattern.

An unusual square road pattern with a possible building (approximately 225 by 50 feet) is located at the road intersection between the launch sites and the electronics site.

Launch Group III

25X1D

This group is located in the extreme northern part of Complex A, 2.5 nm north of the Administration and Support Area. The group contains two launch sites (Sites 5 and 6) and an associated electronics site (Site C) (Figure 7). These sites, first observed on [redacted] TALENT photography and also covered by several KEYHOLE missions, were originally identified as electronics in nature or labeled unidentified. The launch and electronics identifications were made possible by good-quality photography of [redacted] The two launch sites are similar but separately fenced and 3,000 feet apart. Electronics Site C is composed of four separately fenced and widely separated sections, located just north of the launch sites.

25X1D 25X1D

The launch sites are parallel and staggered, and a perpendicular to the long axis of each has an azimuthal orientation of 285 degrees. The launch positions of Site 5 appear to launch between Site 6 and the electronics site. The northernmost launch position of Site 5 is separated by approximately 1,200 feet from the southernmost launch position of Launch Site 6, measured from perpendicular bisectors from each position, and the distance between the more northerly launch position of Site 6 and the southernmost section of Electronics Site C is approximately 800 feet.

Launch Site 5. This site, located 2.3 nm north-northwest of the Administration and Support Area, is enclosed by a double fence, measures 1,200 by 900 feet, and the long axis is oriented north-northeast/south-southwest. This site was previously identified as a possible operational support area. 4/ The site contains two large buildings, one tower, three launch positions, a possible bunker, and two small buildings. One of the large buildings (110 by 60 feet) appears to be a missile-hold/launch building. The three launch positions are generally the same size, 120 by 110 feet, and each contains a small object or piece of equipment. These objects are approximately 165 feet apart and the distance from the missile-hold/launch building to the object in the center of the site is approximately 70 feet. The

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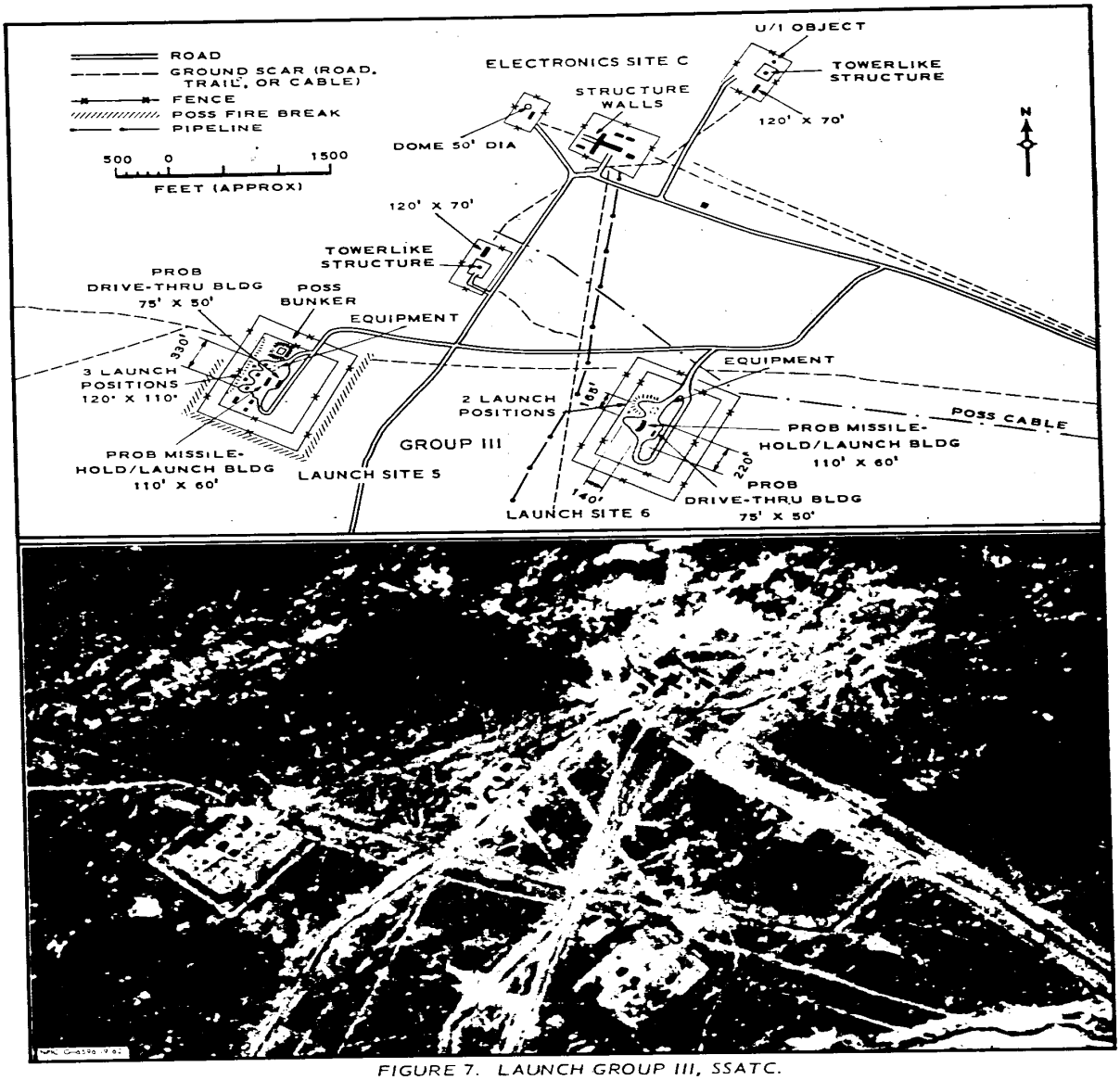

FIGURE 7. LAUNCH GROUP III, SSATC.

small scale of the photography precludes determining the exact size and configuration of these objects. A small structure (20 feet square) is located between the center launch position and each of the two outer positions. A long bar-type revetment is situated between the western side of the inner fence and the launch positions. The possible bunker (approximately 125 feet square) is located between the northernmost launch position and the site entrance.

A row of possible vehicles or pieces of equipment associated with the northernmost launch position is in approximately the same position with respect to the position as the missile-hold/launch building is with respect to the center position.

Launch Site 6. This site, previously unidentified, is 2 nm north of the Administration and Support Area and is approximately the same size as Site 5 (1,200 by 900 feet). The site contains two large buildings, two launch positions with probable objects or markings, and a tower. The two large buildings are centrally located. The larger (110 by 60 feet) is probably a missile-hold/launch building. It appears to be bowed and has a wedge-shaped launch position 240 by 120 feet connected to it forward of its concave side. Probable revetting is discernible between the two launch positions. The smaller building (approximately 75 by 50 feet) is just east of the larger and appears to be a drive-through building.

The more northerly launch position is also generally wedge-shaped and measures approximately 200 by 150 feet. A row of possible pieces of equipment lies in about the same position with respect to the launch position as the missile-hold/launch building is to the other launch position. A cresent-shaped revetment lies around the apex of the launch position.

A structure approximately 25 feet square is located between the two launch positions. This structure may contain monitoring equipment, such as cameras or instrumentation devices.

Electronics Site C. This site is 2.9 nm north-northwest of the Administration and Support Area and 0.5 nm north of Launch Sites 5 and 6. It

consists of four widely spaced, separately fenced facilities, three of which are arranged in a line. A perpendicular to this line has an azimuth of 305 degrees. This arrangement closely resembles that of probable electronics facilities associated with the probable AMM launch complexes near Leningrad.

The central facility appears to be the focal point of activity and is connected to the other three by road and cable. It contains a large irregularly shaped building (450 by 225 feet overall and 60 feet wide) and four smaller buildings (approximately 125 by 50 feet). The western section of the large building is probably still under construction because only two wall-like structures are visible. This section is the only addition to this facility since [redacted] 4/

25X1D

The smallest of the four facilities is in a single-fenced area 450 by 300 feet, located approximately 800 feet west-northwest of the central one. It contains a dome (approximately 50 feet in diameter) and one building 75 by 50 feet. A small structure or piece of equipment is just south of the dome.

The other two facilities are similar in appearance and types of equipment evident. They are approximately 3,800 feet apart and equally spaced from the central facility (one 1,900 feet northeast and the other 1,900 feet southwest). Each contains a single building (approximately 120 by 70 feet) and towerlike structures centrally mounted on 150-foot-square pads. Although both structures appear to be of the same height (50 to 75 feet), the tower on the south is slightly greater in diameter (approximately 50 feet), than that in the northern facility (approximately 30 feet).

Missile Storage and Checkout Area

25X1D

25X1D

This area is located in the extreme northeastern part of Launch Complex A, 2.1 nm north-northeast of the Administration and Support Area (Figure 8). The western half of the facility was observed in [redacted] and the eastern half was seen under construction in [redacted] Photography [redacted] provided the best and most complete coverage of

25X1D

25X1D

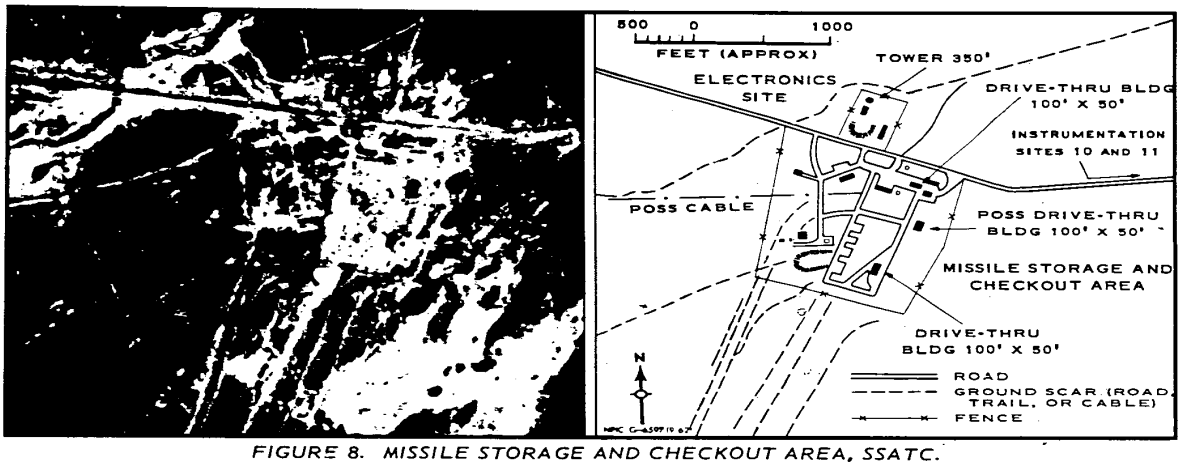

FIGURE 8. MISSILE STORAGE AND CHECKOUT AREA, SSATC.

the area. On this photography the facility appeared complete and operational. There are two drive-through checkout buildings (approximately 100 by 50 feet), one possible drive-through building (approximately 100 by 50 feet), and approximately nine other structures. Four square aprons or 25X1D foundations are visible in the center of the facility. These may be used for 25X1D open storage or could be foundations for storage bunkers or buildings. Equipment was present in the northeast section of the facility in [redacted]

The small fenced area just north of this storage and checkout area is an electronics site, probably a microwave relay station. This facility contains a 350-foot-high tower and two buildings in a single-fenced area measuring 500 by 400 feet.

PROBABLE AMM LAUNCH COMPLEXES NEAR LENINGRAD

25X1D

Three probable AMM launch complexes have been observed in the Leningrad area on KEYHOLE photography. A search of photography from [redacted] has failed to reveal additional complexes of a similar

nature. Detailed interpretation of the development of the complexes on earlier missions has been limited greatly by semidarkness, low sun angle, poor image quality, clouds, cloud shadow, snow-cover, and general lack of
25X1D stereoscopic cover. However, most of the interpretation in this report has been provided by [redacted] which has provided good-quality stereoscopic coverage of all three complexes and is the best received to date. These three complexes have been designated the Northwest Complex, Northeast Complex, and the Southwest Complex.

The Northwest Complex is located about 37 nm northwest of Leningrad, the Southwest Complex 33 nm southwest of Leningrad, and the Northeast Complex 16 nm northeast of Leningrad (Figure 9). Had the Northeast Complex been placed at a corresponding distance from Leningrad as the other two complexes, it would have been positioned in Lake Ladoga. (The Reference Point for Leningrad, taken from the Target Data Inventory, is 59-55-00N 30-20-00E). The three complexes form a triangle measuring 37 nm from the Northwest Complex to the Northeast Complex, 49 nm from the Northeast Complex to the Southwest Complex and 46 nm from the Southwest Complex to the Northwest Complex. All three complexes are connected by road with SAM Ring Road serving the SA-2 SAM sites deployed in the Leningrad area. The Northwest Complex is 10 nm outside the SAM Ring Road; the Northeast Complex is 10 nm inside the road; and the Southwest
25X1D Complex is 8.5 nm outside the road.

[redacted] 38 SA-2 SAM sites, including two probable training sites; five SA-3 SAM sites, 7/ and four Missile Assembly and Storage Facilities have been identified on photography along the SAM Ring Road. Two additional SA-2 SAM sites and two MRBM's (one under construction) have been observed southwest of Leningrad.

The Northeast Complex is the only complex with an airfield immediately adjacent. The photography is such that the operational status of this airfield, Leningrad/Uglovo, could not be determined nor could association with the Northeast Complex be established.

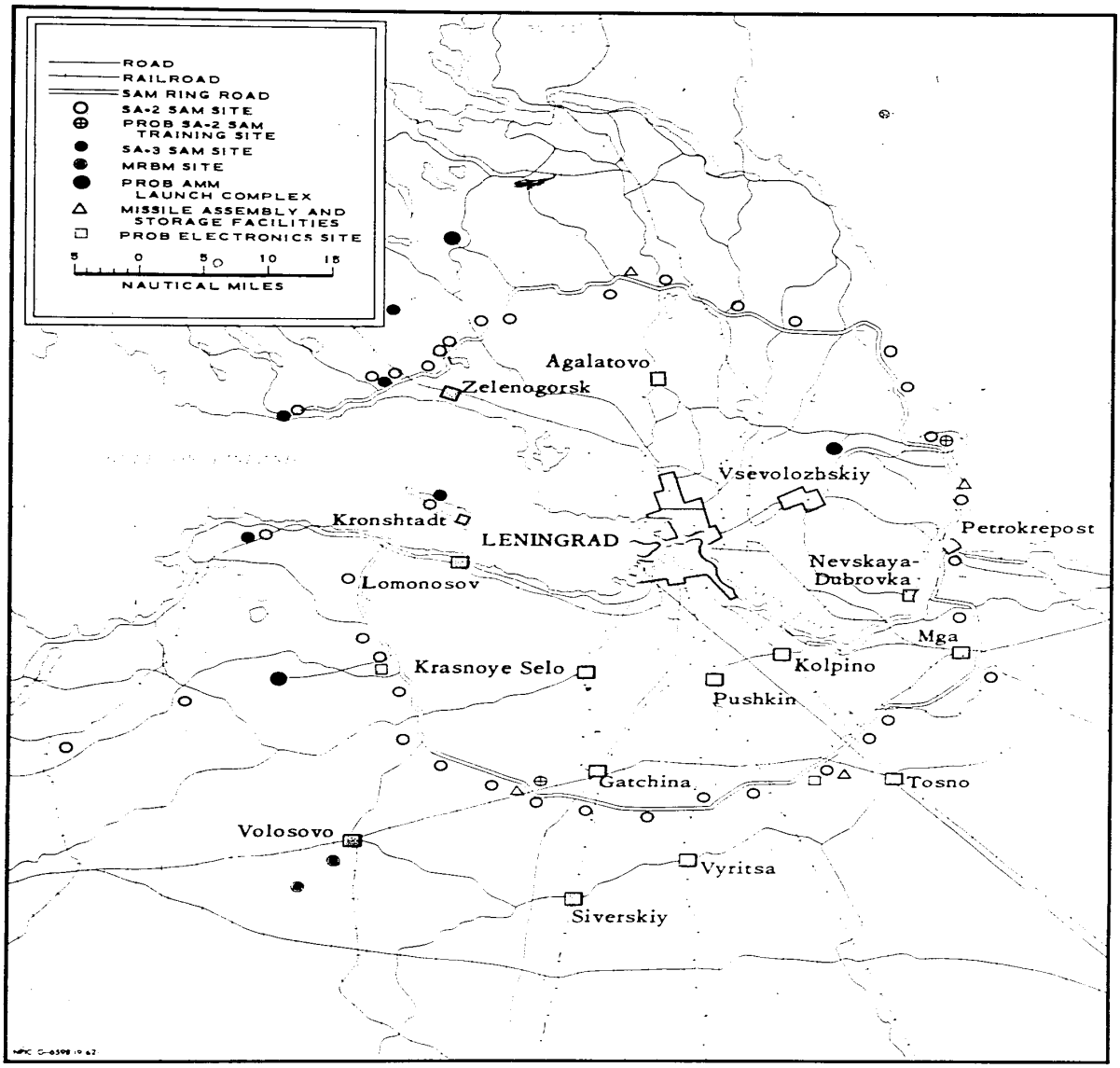

FIGURE 9. LOCATIONS OF MISSILE ACTIVITY IN THE LENINGRAD AREA.

25X1D

KEYHOLE photography of [redacted] first revealed the existence of this type of launch complex (the Northwest Complex) in the Leningrad area. This and subsequent coverage indicated that the barracks and support areas probably were completed first, with initial stages of construction observed at the launch sites as early as [redacted] and final stages observed in [redacted] Construction at the Probable Electronics Facilities at the three launch complexes appeared to be progressing concurrently with the launch sites; at the Northwest Complex possible activity was observed in [redacted] Possible tree clearance was observed at this site in the Northwest Complex as early as [redacted] The first coverage of the Southwest Complex in [redacted] revealed the facility to be in a mid to late stage of construction. The chronological development of the probable AMM Launch Complexes in the Leningrad area as observed on KEYHOLE photography [redacted] is outlined in Table 2.

25X1D 25X1D 25X1D 25X1D 25X1D 25X1D 25X1D

The three complexes are secured and road served and consist of essentially the same major components -- five generally circular launch sites positioned at irregular intervals on both sides of a newly constructed service road, a probable electronics facility, a support area, and a barracks area. All of the launch sites are encompassed by a perimeter road characterized by wide-radius turns at the site entrance. The diameter of each site averages 900 feet. Each launch site has six regularly-spaced bowed buildings of undetermined composition that generally follow the curvature of the perimeter road. The buildings, which probably could serve for missile-hold and/or missile-launch, measure approximately 110 by 60 feet and appear to be tall structures. The majority of the buildings, originally observed to be light in tone, now appear dark. Distance between adjacent perimeter buildings, center to center, averages 280 feet. The distance across the center of the site from perimeter building to perimeter building is approximately 660 feet. Extending from the majority of these buildings toward the center of the site is a bowed revetment approximately 100 by 25 feet. These revetments do not appear as high as the perimeter buildings. Some of these revetments which originally were observed to be

25X1D

light in tone now appear dark. They encompass the area in the Northwest Complex where a light circular position, approximately 95 feet in diameter, was first observed on [redacted] photography. The perimeter building, the revetment, and the adjacent prepared areas combine to give the impression of generally similar pie-shaped or triangular patterns. These patterns average 220 feet across the base and 265 feet from site perimeter to apex. Adjacent revetments would thus furnish protection to both sides of these patterns or positions.

A probable revetted site control building (45 by 20 feet) is situated near the center of all of the sites. The probable site control building would handle the mechanics of launching each missile and is not inferred to have a tracking or radar function. These units were observed for the first time in [redacted] at the Northeast Complex and by [redacted] at all the sites in all three complexes. Vegetation in varying degrees remains in the center of most of the sites.

25X1D 25X1D

Probable electronics facilities, generally similar in composition but not in location with respect to launch site, have been observed under construction at the three complexes. In the Southwest Complex the facility is located between the launch sites and Leningrad; in the Northwest Complex it is located beyond the launch sites in the direction away from Leningrad; in the Northeast Complex it is located between the launch sites and Leningrad. The principal components at the Southwest and Northwest Complexes include a large probable control center, towerlike structures, and a crescent-shaped structure. A probable electronics facility is observed under construction at the Northeast Complex through heavy haze and scattered clouds, which precludes definite identification of facilities under development.

Support areas at each of the complexes are similar and consist of approximately 15 conventional-type buildings. Missile Assembly and Storage Facilities along the SAM Ring Road could provide required service for the complexes. The Northwest Complex lies 14 nm west-northwest of a Missile Assembly and Storage Facility, the Northeast Complex is 10 nm

west-northwest of such a facility; and the Southwest Complex is 23 nm northwest of this facility.

Detailed information is presented below in chronological order to show the construction development of each complex.

Northwest Complex

The Northwest Probable AMM Launch Complex (Figures 10 and 11), 60-27-10N 29-44-10E, is located 37 nm northwest of Leningrad and 10 nm outside the SAM Ring Road.

The complex is enclosed by a security fence, and at least one probable security building is discernible at the entrance. It is situated in a wooded area on relatively level terrain and occupies a roughly rectangular area approximately 6,500 by 4,300 feet.

The complex is composed of a cluster of five generally circular launch sites arranged in a semicircular pattern along both sides of a main service road, a probable electronics facility, and a support area, all within the security fence. A barracks area and a probable construction camp lie just outside the fence. 25X1D

The initial date of construction of the complex cannot be definitely ascertained from existing photography. TALENT photography of [redacted] however, revealed that the complex did not exist at that time. It can be established that construction was in a relatively early stage by [redacted] and by [redacted] was in a late stage of construction. 25X1D 25X1D 25X1D

A power line which was not present in [redacted] can be traced as far as the south-central boundary at a point approximately 2,260 feet southeast of the support area.

The principal means of access to the complex is a road extending about 10 nm from the SAM Ring Road. From this road a bypass road, constructed since [redacted] skirts west of the complex and feeds into the general road network of the area. The complex has no rail service. The closest rail 25X1D

Table 2. Chronology of Construction Activity at the Leningrad AMM Complexes.
(Status as of Mission and Date Indicated.)

Item	[redacted]								
THWEST COMPLEX	First identified				Not Covered	Identification only	Not Covered		Not Covered
nch Sites	Only Sites 3 & 4 visible;* in relatively early stage of construction	Five sites visible; in relatively early stage of construction	Construction continuing; perimeter buildings apparent	Construction continuing at five sites				Appears to be in late stage of construction	
bable ectronics	Area cloud-covered	Possible clearing of area	Early construction activity at center and east components	Work observed at three components of facility				Under construction: Probable control center approx. 50% complete	
ort and Barracks	Area cloud-covered	Probably complete	Complete	No apparent change				No apparent change	
HEAST COMPLEX	Not Covered	First identified		Identification only	Not Covered	Not Covered			Not Covered
nch Sites		In relatively early stage of construction	Construction continuing; perimeter buildings apparent				In relatively late stage of construction	In late stage of construction	
able ctronics		None observed	Possible construction activity				Construction activity observed through scattered clouds. Probable control center under construction	Construction continues, observed through heavy haze and scattered clouds	
ort and Barracks		Probably complete	Complete				No apparent change	No apparent change	
IWEST COMPLEX	Not Covered	Not Covered	Not Covered	Not Covered	First identified	Not Covered	Identification only		Not Covered
ch Sites					Probably in mid-stage of construction			In late stage of construction	
able ctronics					In mid- to late-stage of construction			In late stage of construction	
ort and Barracks					Complete			No apparent change	

s are numbered from west to east, as shown on Figures 10, 12, and 14.

25X1D

line is 8 nm to the northeast. The complex is served by a good service road, constructed since [redacted] terminating at Site 5. Each of the five sites is encompassed by a perimeter road, with an entrance and exit road 25X1D off the complex service road. A number of probable construction trails 25X1D extending through the complex in the vicinity of the sites were visible on [redacted] photography. Some of these trails are no longer apparent on [redacted] photography.

The complex was first observed on KEYHOLE photography of [redacted] 25X1D which revealed only two of the five sites through heavy clouds. These sites, 3 and 4, appeared to be in a comparatively early stage of construction. At that time the two sites were bounded by a generally circular road. Six evenly spaced, roughly triangular prepared areas were visible along the inner side of the perimeter road and extending approximately 265 feet toward the center. On each prepared area was a circular position or low moundlike structure about 95 feet in diameter and lighter in tone than the adjacent prepared area. The terrain in the center of the site and between 25X1D the prepared areas appeared undisturbed. Coverage of the following month, [redacted] again showed the two previously identified sites and revealed three additional sites, which were presumably cloud covered on the earlier photography. Details of the sites were not determinable, because of semi-darkness; however, all five sites appeared to be generally similar in design. 25X1D A support area was observed just west of the five sites.

[redacted] respectively, the five generally circular sites were again apparent. The site diameter perpendicular to the service road entrance averaged 900 feet. The distance from the complex service road to the far edge of the sites 25X1D ranged from 900 to 1,025 feet. The distance from site to adjacent site -- center to center -- varied from 1,285 to 1,715 feet. [redacted] coverage revealed the presence of six buildings on the prepared areas previously observed and closer to the perimeter road than the previously reported circular positions or mounded areas. Those buildings whose images are distinct enough for mensuration average 110 feet in length and

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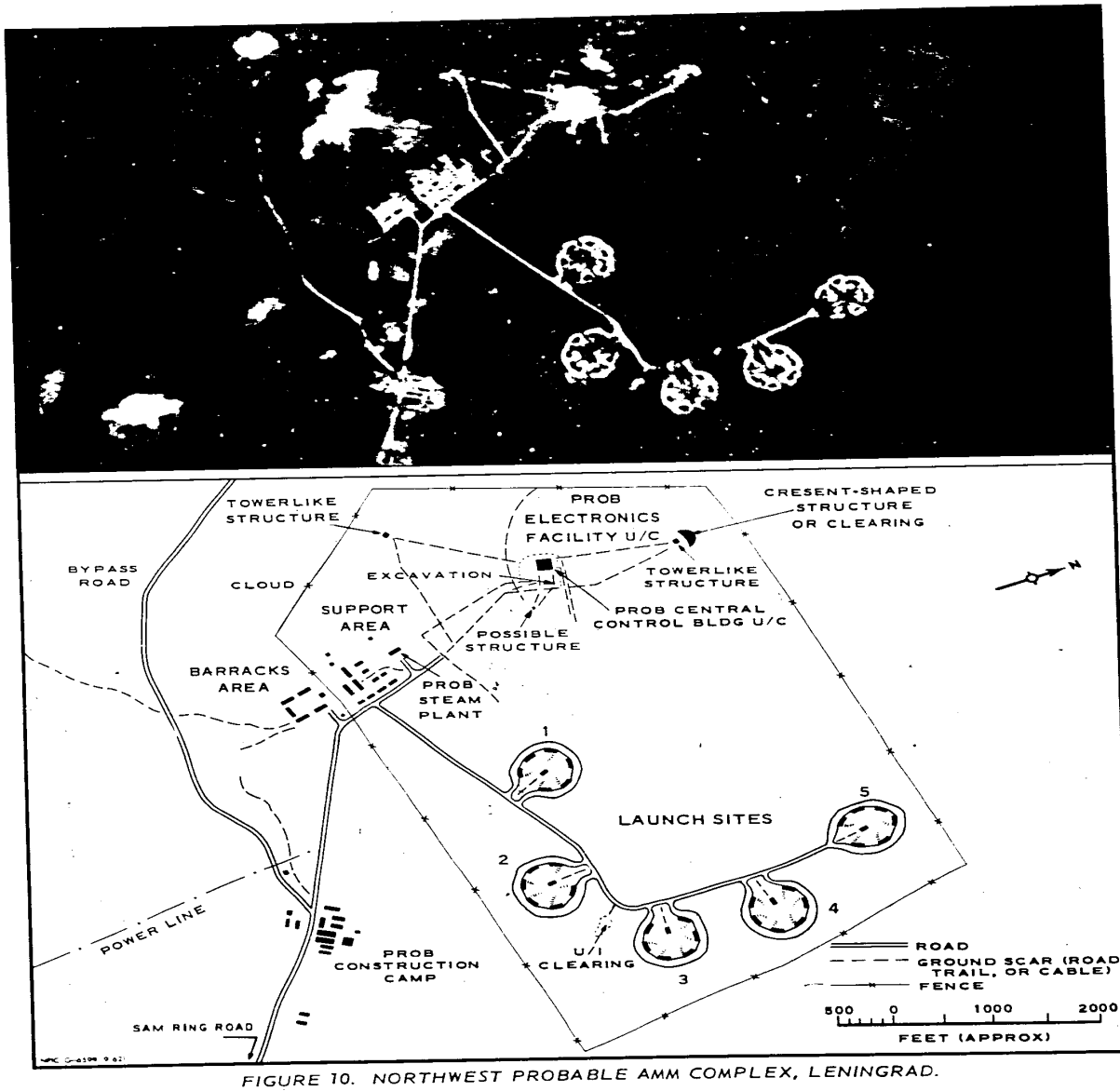

FIGURE 10. NORTHWEST PROBABLE AMM COMPLEX, LENINGRAD.

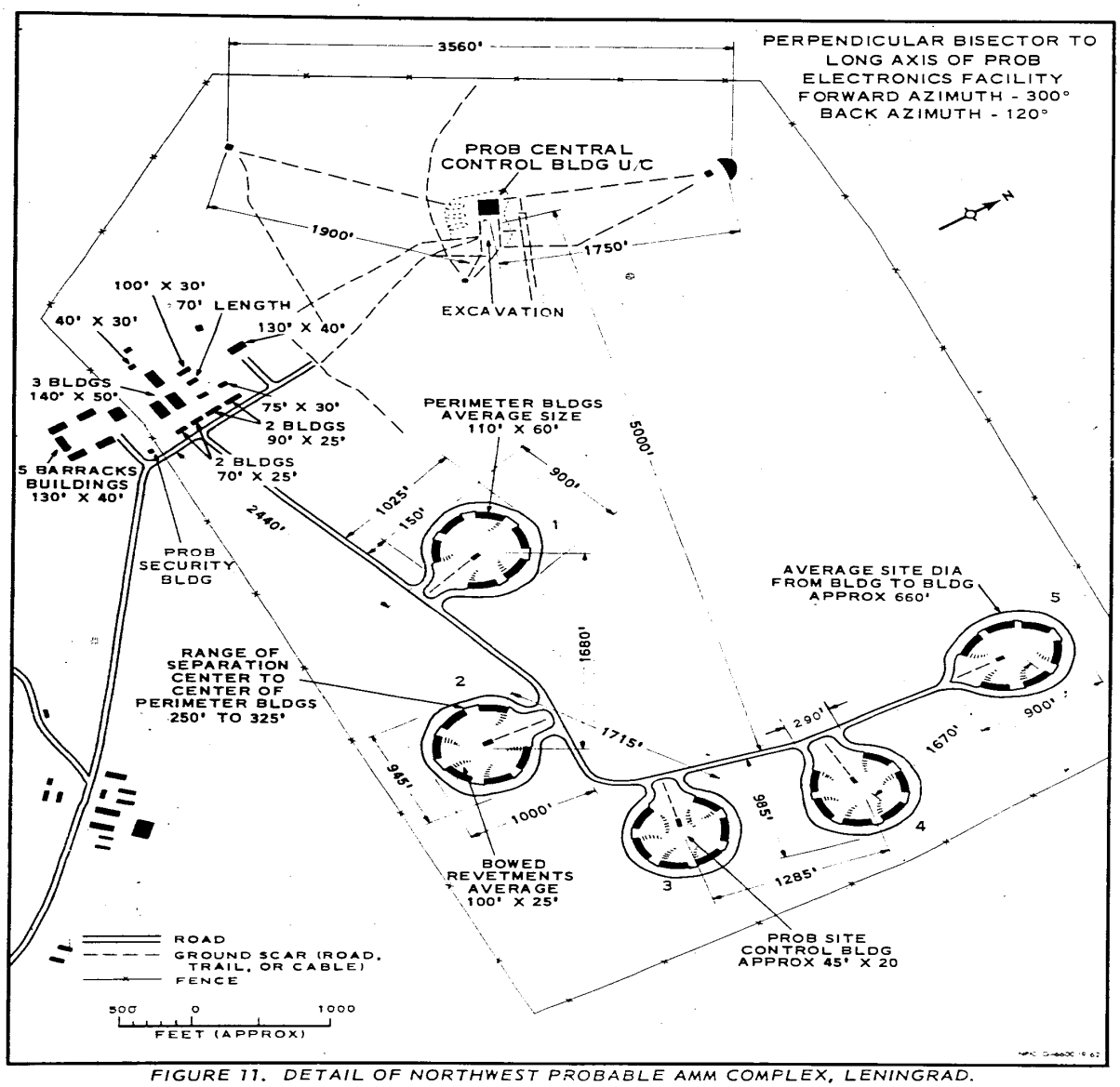

FIGURE 11. DETAIL OF NORTHWEST PROBABLE AMM COMPLEX, LENINGRAD.

60 feet in width. Photography available does not permit identification of the composition of these buildings. Heights cannot be accurately ascertained, but the buildings appear to be tall structures. The separation between these perimeter buildings -- center to center -- ranges from 250 to 325 feet. The distance across the center from one perimeter building to another approximates 660 feet.

Approximately 2,440 feet west of Site 1 is a support area consisting of about 15 buildings. The three largest appear to be of uniform size, each measuring approximately 140 by 50 feet; the remainder vary in size and shape. Just south of this support area but outside the fence line is a barracks area composed of five multistory barracks buildings, each 130 by 40 feet, and a smaller building, 60 by 30 feet.

A probable electronics facility is situated along the western boundary of the complex within the complex fence line but not fenced separately. The long axis is oriented in a north-northeast/south-southwest direction, generally parallel to the line formed by the launch sites, and measures about 3,560 feet in length. It is approximately 5,280 feet west-northwest of the center of the launch sites. The support area, which lies 2,300 feet to the south, is connected with it by road. In the approximate center of the
25X1D facility a large rectangular ground pattern measuring 350 by 210 feet was observed on the [redacted] photography. Work of an undetermined
25X1D nature appeared to be in progress in this area and at an adjacent rectangular pattern on both [redacted] photography. Connected to this central facility are two small cleared areas, one 1,900 feet to the 25X1D south-southwest and the other 1,750 feet to the north-northeast.

25X1D Numerous differences are apparent between [redacted] some due to new construction, others to more distinct photo imagery. The site perimeter roads appear to have been improved and widened at points opposite the perimeter buildings. Cleared perimeter areas including the road are at least 60 feet in width. Wide-radius road curves are now apparent at all five sites. No significant change is evident in the barracks or support areas. Six perimeter buildings are now observed at all five

sites. All but 2 of these 30 buildings are dark in color. The buildings appear to be of uniform size, approximately 110 by 60 feet, and to follow the curvature of the perimeter road. Extending from the vicinity of a number of these perimeter buildings toward the site center is a bowed structure or revetment, approximately 100 by 25 feet. The combination of the perimeter buildings and revetments with adjacent prepared areas gives the impression of a pie-shaped or triangular pattern. These patterns, which are generally similar but not identical, average 220 feet across the base and 265 feet from site perimeter to apex. At each of the sites, an earth scar extends from the complex service road to a building (approximately 45 by 20 feet) observed at this complex for the first time and probably intended for site control. These buildings are revetted.

25X1D

Since [redacted] construction has continued at the probable electronics facility. A low, one-story building, probably semiburied, is being constructed in the center of the facility and as of [redacted] measured approximately 160 by 160 feet. This building will probably serve as the control center for the complex. Extensive construction activity is apparent at the building site, which has increased in size since [redacted]. A narrow clearing, possibly for a power line, extends south and east from this location in the direction of the launch sites. A towerlike structure is observed at each extremity of the facility, and in addition, at the north-northeast extremity, is a crescent-shaped structure or clearing

25X1D

25X1D

Northeast Complex

The Northeast Probable AMM Launch Complex (Figures 12 and 13), 60-05-20N 30-44-00E, is located 16 nm northeast of Leningrad and 10 nm inside the SAM Ring Road.

Segments of a security fence are observed enclosing most of the area. The complex has been constructed on generally level wooded terrain and is adjacent to and northeast of Leningrad/Uglovo Airfield. It occupies an

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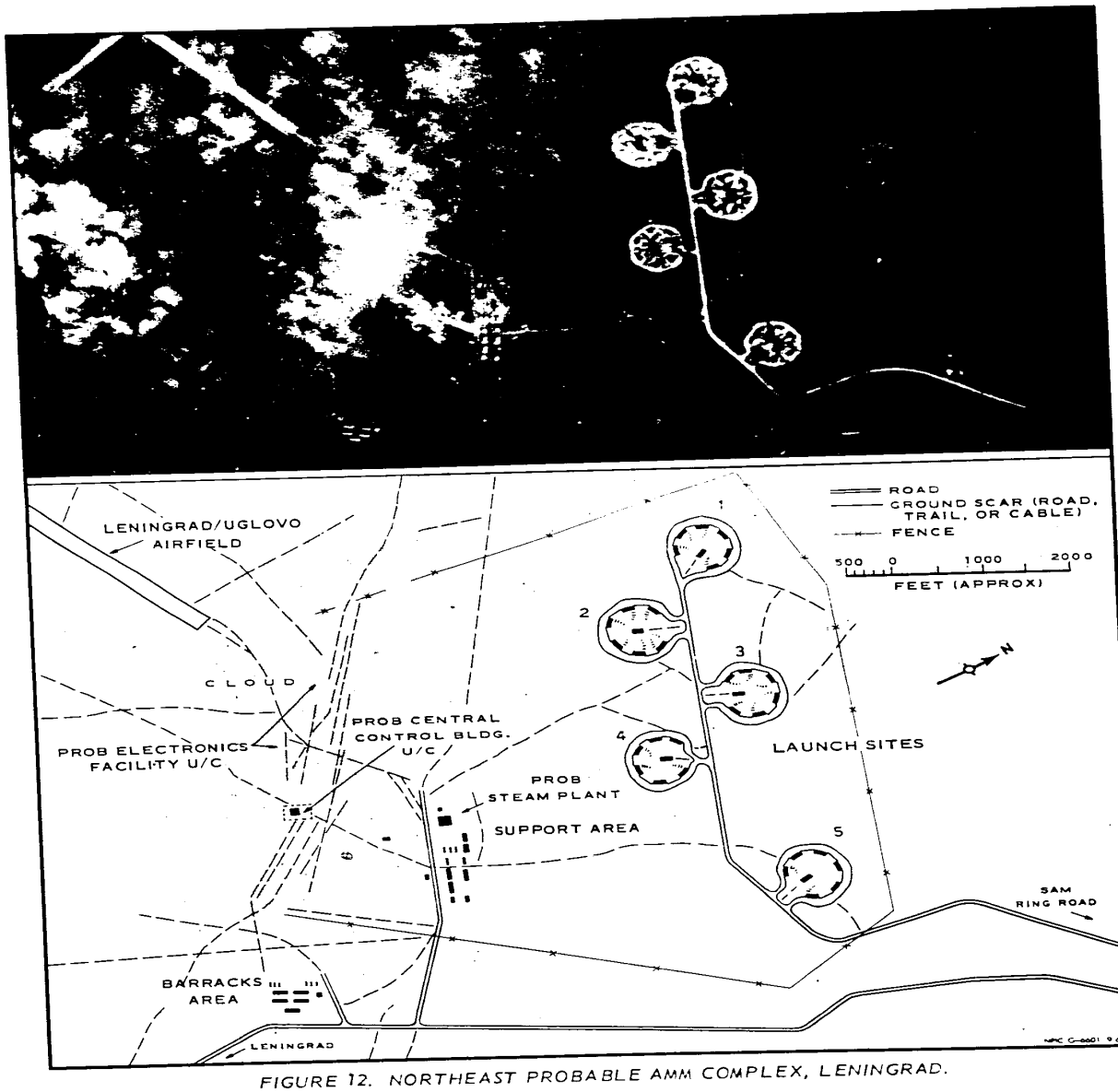

FIGURE 12. NORTHEAST PROBABLE AMM COMPLEX, LENINGRAD.

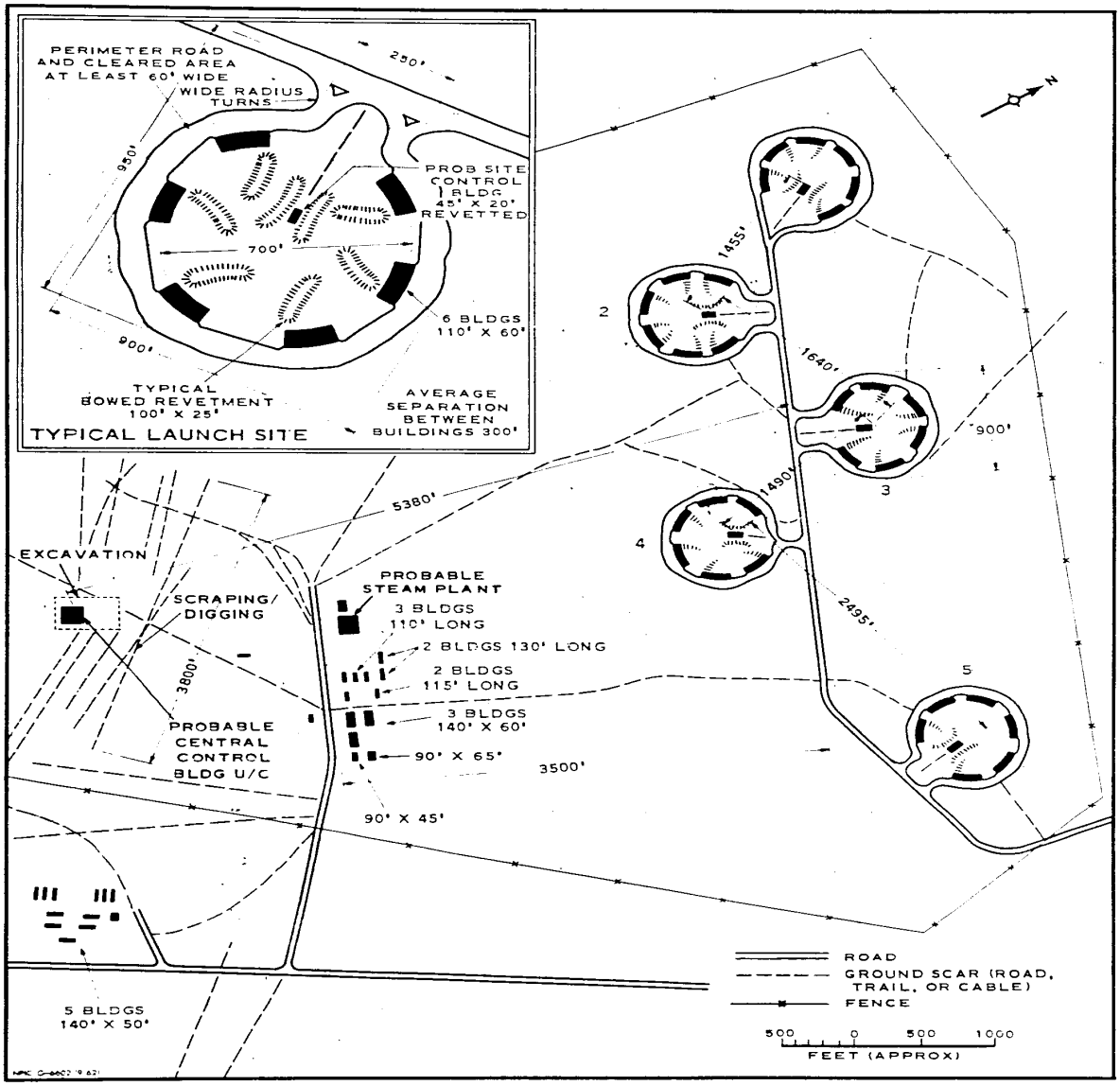

FIGURE 13. DETAIL OF NORTHEAST PROBABLE AMM COMPLEX, LENINGRAD.

irregular area approximately 7,800 by 7,300 feet. The complex consists of five generally circular launch sites positioned on either side of a main service road, a support area, and a barracks area. No power line serving the complex has been identified to date. Access to the complex is by a service road which connects 7,600 feet to the northeast with an existing road running southwest to Leningrad. The Leningrad/Lake Ladoga rail line passes approximately one nm east of the complex. No rail spur serves the complex directly. Four of the five sites are served by an entrance and exit road which branches off the complex service road and encompasses the site. The distance from entrance to exit road ranges from 250 to 290 feet at Sites 2 through 5. A number of probable construction trails are observed at the complex. 25X1D

This complex was first identified on photography of [redacted] It appeared similar in the number of sites and configuration to the complex observed northwest of Leningrad. Support and barracks areas were visible at that time south of the complex. 25X1D

25X1D Better coverage of the complex was provided by photography of [redacted] As seen on that photography, the five sites average 900 feet in diameter, and distances from site to adjacent site -- center to center -- range from 1,455 to 2,495 feet. Perimeter buildings were observed for the first time in [redacted]. 25X1D 25X1D

Stereoscopic coverage of [redacted] revealed certain changes in the complex. The site perimeter roads appear to have been improved and widened. The width of the road and adjacent clearing is at least 60 feet. Wide-radius turns leading from the complex service road to each of the sites are clearly evident.

A certain amount of vegetation remains in the center of each site. Just short of the center of each site and connected by an earth scar with the complex service road is a probable site control building, approximately 45 by 20 feet. The structure is oriented in each case with the long axis perpendicular to the complex service road and is revetted on both sides. Six regularly spaced perimeter buildings are discernible at each site on

25X1D

the [redacted] photography. They appear to be of uniform size and shape, each about 110 by 60 feet, and are not truly rectangular but appear bowed and follow the curvature of the perimeter road. These perimeter buildings are about 300 feet apart, center to center. Distance across the site from building to building ranges from 660 to 715 feet. All but one of these perimeter buildings in Sites 1 and 2 are light in tone; all remaining buildings in the other three sites are dark. A bowed structure, or revetment most frequently light in tone, is now observed positioned close to the majority of these perimeter buildings. These revetments are approximately 100 by 25 feet.

The support area consists of three large rectangular buildings measuring approximately 140 by 60 feet and at least twelve additional buildings. Just to the south is a barracks area composed of five barracks buildings, each 140 by 50 feet, one smaller building, and 6 possible buildings.

A probable electronics facility is observed through heavy haze and scattered clouds. This facility is located 5,380 feet south-southwest of the launch sites and 2,250 feet southwest of the support area. Two road segments are under construction or improvement from the support area to the site, and scraping and grading are observed there, with scars extending in a northwest/southeast direction to a distance of approximately 3,800 feet.

25X1D

A probable central control building is under construction near the center of this facility. Possible construction activity was observed as early as [redacted] at this site, now identified as a probable electronics facility.

Southwest Complex

The Southwest Probable AMM Launch Complex (Figures 14 and 15), 59-43-00N 029-18-30E, located 33 nm southwest of Leningrad and 8.5 nm outside the SAM Ring Road, was observed to be under construction on KEYHOLE photography of [redacted] 25X1D

Security fencing encloses the complex, and there are two probable guard towers, one each along the north and west boundaries. The complex

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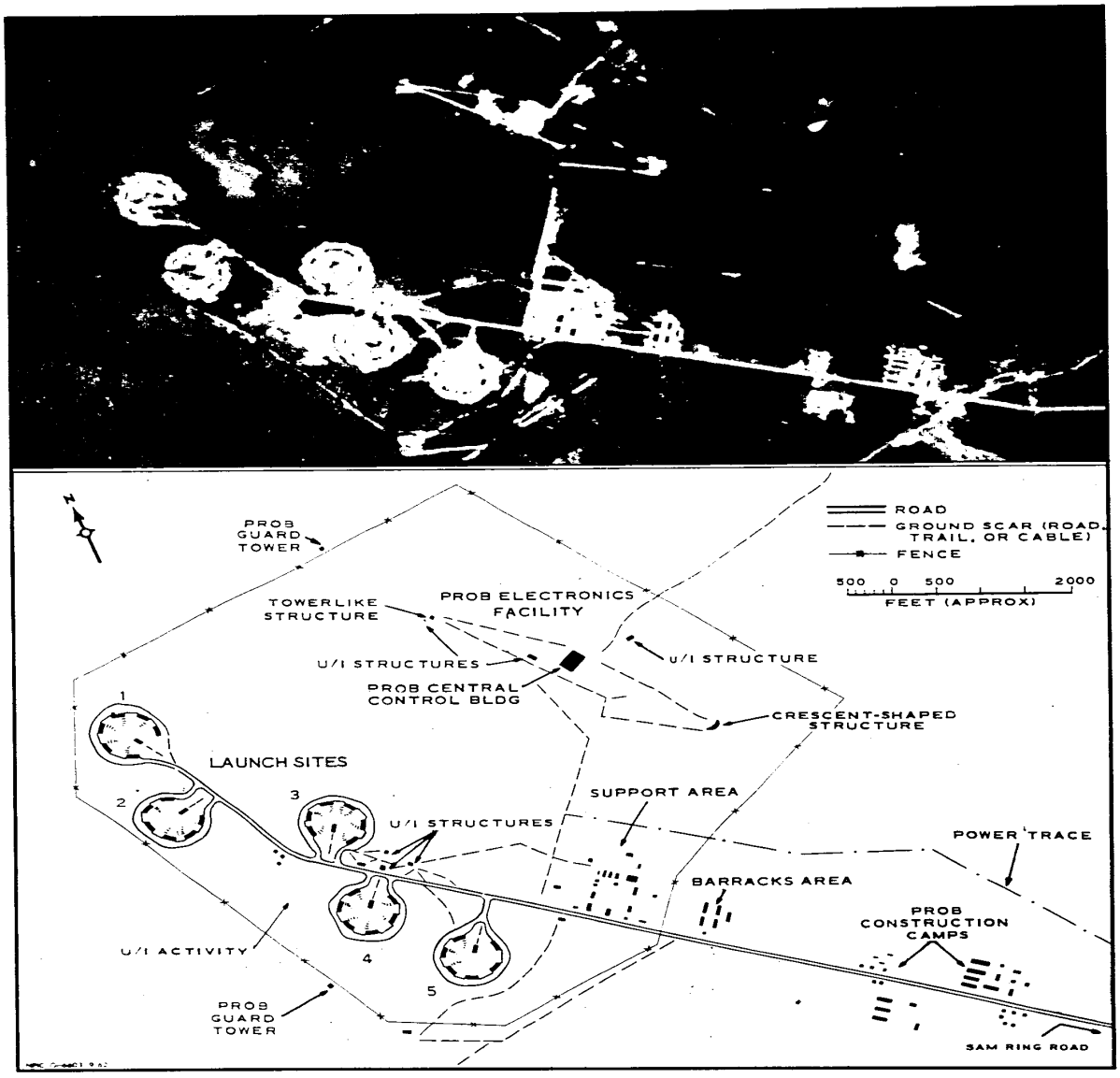

FIGURE 14. SOUTHWEST PROBABLE AMM COMPLEX, LENINGRAD.

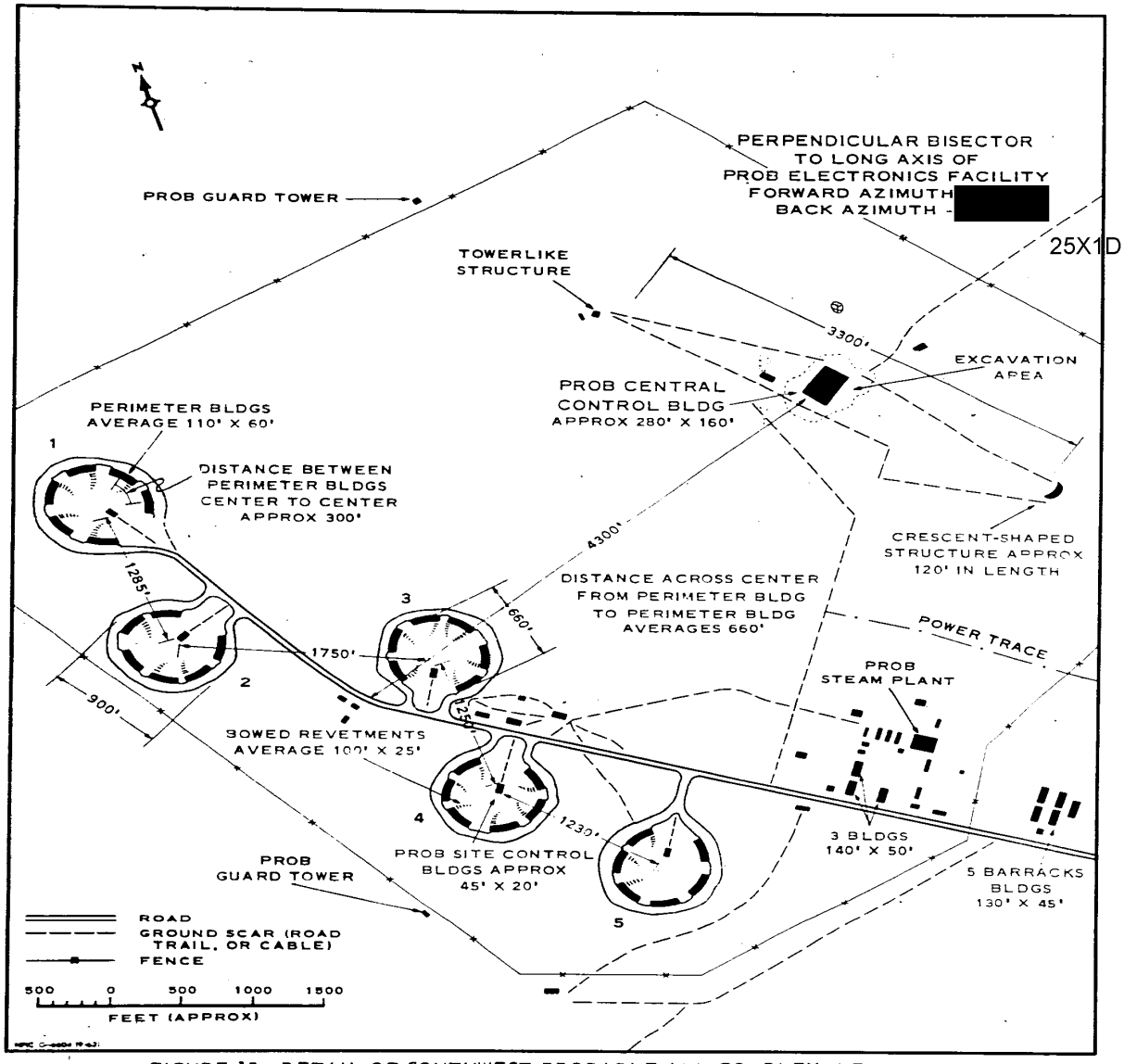

FIGURE 15. DETAIL OF SOUTHWEST PROBABLE AMM COMPLEX, LENINGRAD.

occupies an area approximately 7,000 feet square and is situated in a wooded area on generally level terrain. The complex consists of a cluster of five roughly circular launch sites positioned along a main service road, a probable electronics facility, and a support area. Just outside the fence is a barracks area and camps probably associated with the construction activity. 25X1D

The principal means of access is a road constructed since [redacted] extending 8.5 nm west from the SAM Ring Road and terminating at the five launch sites. There is no direct rail connection to the complex; the closest railroad lies approximately 8 nm to the west. Sites 2, 3, and 4 are served by an entrance and an exit road off the complex service road. Sites 1 and 5 are connected with the complex service road by a single road providing both entrance and exit. Power is supplied to the complex from the southeast. No aboveground power lines serving the individual launch sites are discernible. 25X1D

The first coverage of the complex, in [redacted] revealed the existence of five generally circular launch sites, probably in a mid-construction stage. A description of the complex based on this photography follows. On Site 2, which is most distinct, are six regularly spaced buildings with the major axis aligned along the perimeter road. These perimeter buildings, uniform in shape and generally following the curvature of the road, average 110 by 60 feet. Similar buildings are observed in the other four sites, but not clear enough for a detailed analysis. These buildings appear to be tall structures. Smaller structures are observed near some but not all of these buildings, usually extending at a diagonal from the larger structure. Vegetation in varying degrees is observed in the center of each site. Probable construction trails serve a number of the sites. The diameter of Sites 1, 2, and 3 perpendicular to the entrance is approximately 900 feet; the perimeters of Sites 4 and 5 are not distinct enough to permit mensuration. The distance across the center of the site from one perimeter building to another averages 660 feet. The distances between the centers of those buildings that are sufficiently clear

for mensuration approximates 300 feet. The distance between sites -- center to center -- is not uniform, ranging from 1,230 to 1,750 feet.

Centrally located with respect to the launch sites is an area where extensive scraping and grading of an undetermined nature is observed. A number of small unidentified structures are observed near Sites 3 and 4 on both sides of the service road. Just inside the south-central boundary and 900 feet from the closest launch site (Site 5) is a support area consisting of three large buildings, each approximately 140 by 50 feet, and about 17 smaller buildings of various sizes and shapes.

A probable electronics facility is located approximately 3,000 feet east-northeast of Site 3 within the complex fence but not fenced separately. It is connected by road with the support area, which lies 3,110 feet to the south. The long axis of this facility is oriented in a northwest/southeast direction. It measures approximately 3,300 feet along its longer axis, which generally parallels the line formed by the launch sites. Significant features observed include a probable central control building (280 by 160 feet) located at the center of the facility, a building located just west of center, and possible structures at each end of the facility that were not clearly discernible, because of haze. Two earth scars, probably a road and a cable line, connect the three areas of the facility.

The barracks area, just outside the fence, is composed of five barracks buildings, each 130 by 45 feet, and one smaller building. Just beyond the barracks area and along the main road to the complex are at least five probable construction camps.

25X1D

25X1D [redacted] shows the following developments since [redacted] Launch site perimeter roads appear to have been improved and widened. The probable revetted site control buildings, approximately 45 by 20 feet, observed at the other two complexes, are identified here for the first time, just short of the center of each launch site and connected by a ground scar to the complex service road. The perimeter buildings are more distinct than on the [redacted] photography and appear generally of uniform size and shape. Six perimeter buildings are now observed at each site,

25X1D

each approximately 110 by 60 feet. All are dark in tone and appear to follow the curvature of the road. The structures previously observed near the perimeter buildings can now be identified as revetments. These revetments are bowed and measure approximately 100 by 25 feet. Most of them are dark in tone. The combination of these revetments with the perimeter buildings and adjacent prepared areas gives the impression of a triangular or pie-shaped pattern. No significant change is discernible in the support or barracks areas or probable construction camps.

25X1D

The relatively good [redacted] photography of the probable electronics facility reveals that the probable central control building in the center of the facility is a one-story structure, probably semiburied, and approximately 280 by 160 feet. Just to the east in a small clearing is an unidentified structure; just to the west is another unidentified structure. A towerlike structure is discernible in the clearing to the northwest of the probable control center and a crescent-shaped structure (possible dome under construction) in the southeast clearing, which appears to be mounted on a base and is approximately 120 feet in length. No cable scars extending from the facility to the launch sites are visible.

Additional Electronics Facilities

A detailed search was made of the Leningrad area for additional AMM-related electronics facilities, particularly sites that resemble AMM-associated electronic sites at the SSATC. No sites were identified that bore any close resemblance. However, the search did reveal two probable electronics sites near the Leningrad SAM Ring Road that may possibly be related to AMM activity. No definite correlation could be made between these sites and the probable AMM complexes or the Leningrad SA-2 SAM Defense System. The two sites are connected by road to the SAM Ring Road (Figure 9) and are located 25 to 30 nm southwest and south-southeast of Leningrad. The Southwest Probable Electronics Site is directly connected by road with the Southwest Probable AMM Launch Complex.

The date of construction and the operational status of these facilities cannot be determined at this time. The sites southwest and south-southeast of Leningrad are generally similar in appearance to each other.

Probable Southwest Site

This is an irregular fenced site located in a flat, wooded area 25.5 nm southwest of Leningrad at 59-44-20N 29-34-30E (Figure 16). It is situated just west of the SAM Ring Road and is 8 nm east-northeast of the Southwest Probable AMM Launch Complex. The site is served by a road extending from the road connecting the SAM Ring Road and the Southwest Launch Complex. 25X1D 25X1D 25X1D

This site was observed on [redacted] KEYHOLE missions. The first was in [redacted] and the [redacted] photography. An irregular shaped, possibly earth-covered structure with a white domelike object approximately 120 feet in diameter on the north end is located near the center of the site. A similar structure also is near the center of the South-southeast Probable Electronics Site (Figure 17). Also included are a large U-shaped building, three towerlike structures, three small buildings, and a possible security building near the site entrance. 25X1D 25X1D

The [redacted] and the irregularly shaped structure near the center with the domelike object appeared dark in tone; form and shape detail of the structure and the domelike object was not discernible. The dark tone and rough texture associated with the structure on the latter photography probably is caused by foliage or vegetation planted atop the structure. 25X1D

The site was not present on TALENT photography of [redacted]

Probable South-Southeast Site

This site is also an irregularly shaped fenced area located in a flat, wooded area (Figure 18). It is 25 nm south-southeast of Leningrad and approximately 1.3 nm south of the SAM Ring Road at 59-32-20N 30-39-00E. This site was identified on photography of [redacted]

25X1D

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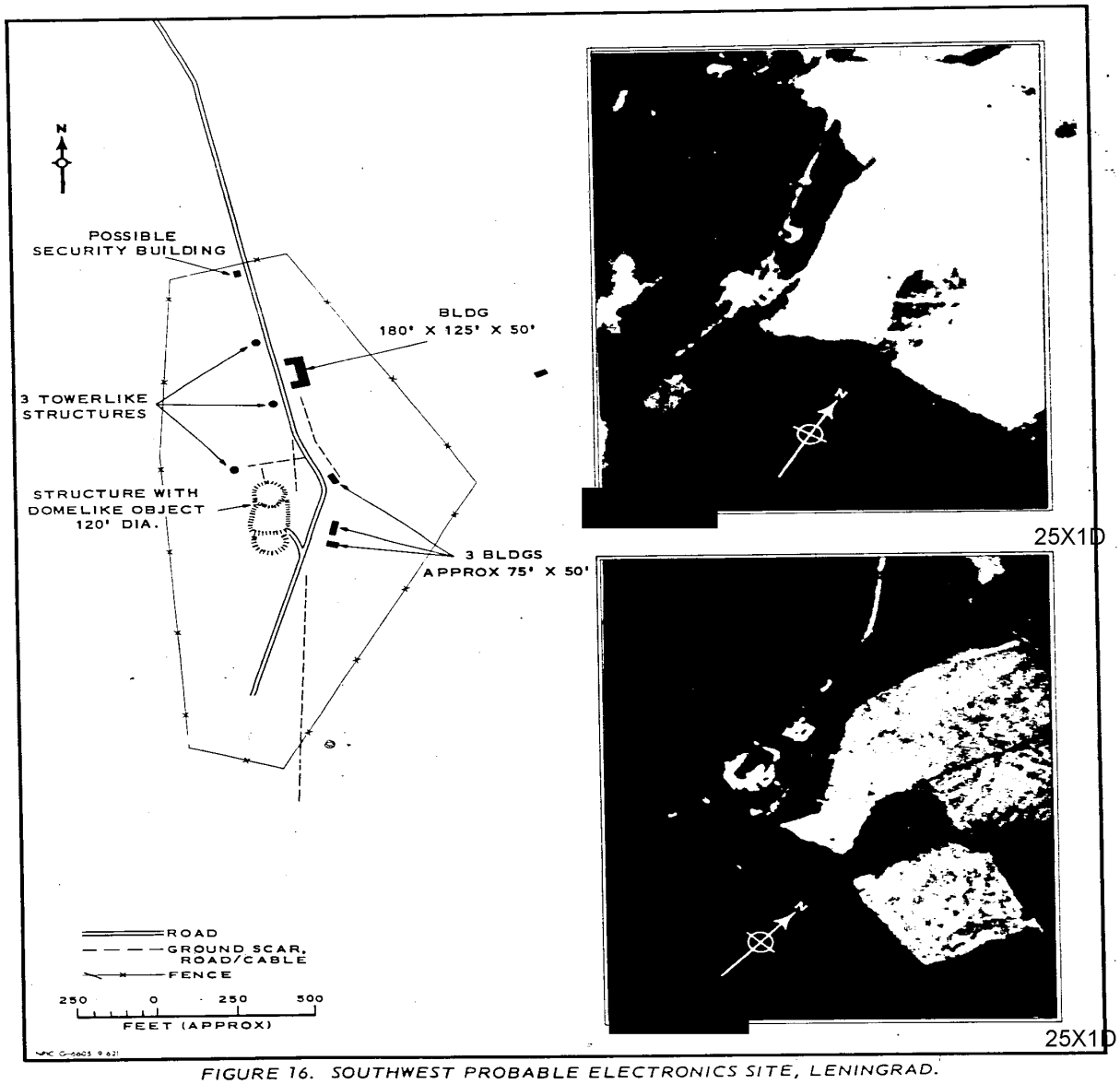


FIGURE 16. SOUTHWEST PROBABLE ELECTRONICS SITE, LENINGRAD.

This site also contains an irregularly shaped possible earth-covered structure, with a higher domelike portion approximately 100 feet in diameter on the west end of the structure (Figure 17). The site also includes seven square hardstands with a tower and/or other equipment on each hardstand. These hardstands are in clearings in the woods and are connected by road to a common central service road. The layout of the central structure, the service road, and other associated facilities is generally similar to that found at the Southwest Probable Electronics Site. A large U-shaped building is located near the entrance to the site.

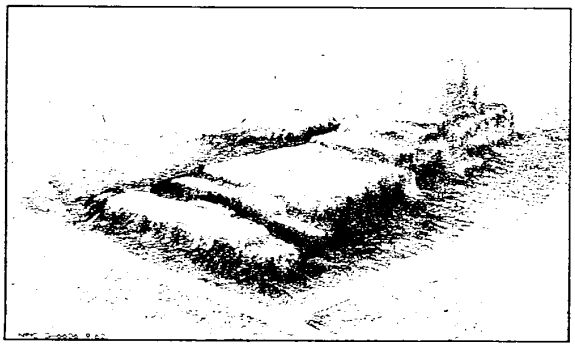
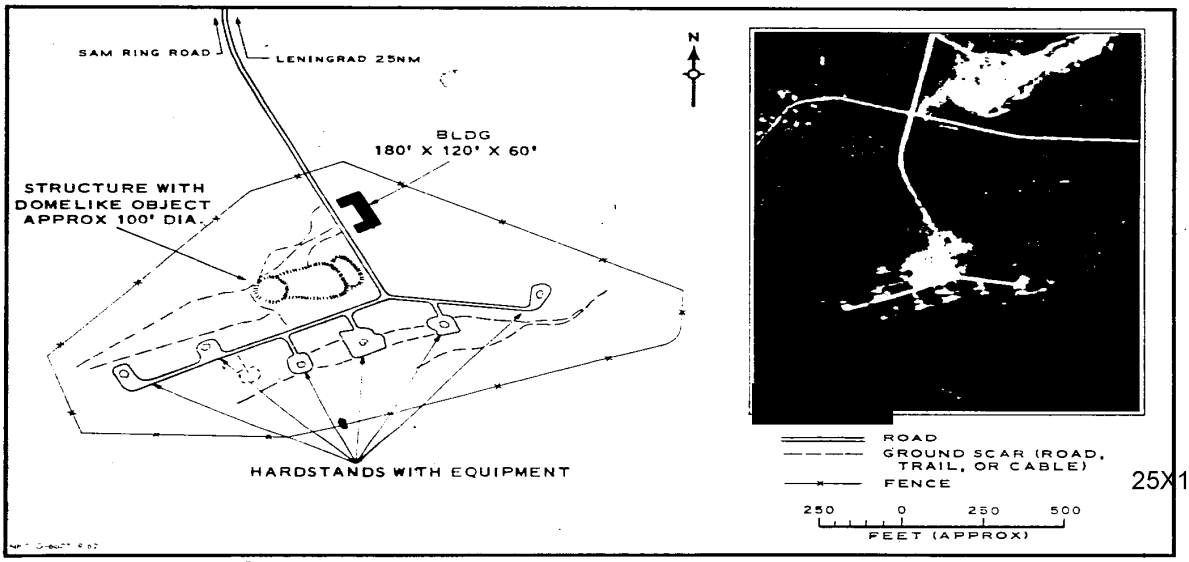


FIGURE 17. POSSIBLE EARTH-COVERED STRUCTURE LOCATED AT PROBABLE ELECTRONICS SITES NEAR LENINGRAD.



25X1D

FIGURE 18. SOUTH-SOUTHEAST PROBABLE ELECTRONICS SITE, LENINGRAD.

Next 3 Page(s) In Document Exempt

Approved For Release 2001/07/16 : CIA-RDP78T05439A000200220038-8

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25X1D

[redacted]

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MAPS OR CHARTS (Continued)

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1. NPIC. B-48/61, Unidentified Complexes Near Leningrad, USSR, Dec 61 (TOP SECRET CHESS RUFF)
2. NPIC. R-103/62, [redacted] Part III, Jun 62 (TOP SECRET CHESS RUFF)
3. NPIC. R-107/62, [redacted] Part II, Jul 62 (TOP SECRET CHESS RUFF)
4. CIA. PIC/JR 1010/61, Antimissile Complex, Sary Shagan, USSR, Apr 61 (SECRET/Noforn [redacted] Downgrading Prohibited)
5. CIA. PIC/JR-3/61, Antimissile Test Complex, Sary Shagan, USSR, Changes Since [redacted] Apr 61 (TOP SECRET CHESS RUFF)
6. NPIC. R-21/62, Antimissile Test Center, Sary Shagan, USSR, Changes and Additions as of [redacted] Feb 62 (TOP SECRET CHESS RUFF)
7. NPIC. R-116/62, [redacted], Part I, Aug 60 (TOP SECRET CHESS RUFF)
8. NPIC. R-27/62, [redacted] Part II, Mar 62 (TOP SECRET CHESS RUFF)
9. NPIC. R-102/62, [redacted], Part II, Jun 62 (TOP SECRET CHESS RUFF)

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REQUIREMENTS

CIA/OSI/R-177/61, 31 Oct 61 (Sary Shagan)

CIA/OSI/R-40/62, 15 Mar 62 (Chita, Leningrad, and Sary Shagan)

CIA/OSI/R-47/62, 20 Mar 62 (Chita)

NPIC/R-135/62

REQUIREMENTS (Continued)

CIA/OSI/R-40/62 (Revised), 23 Mar 62 (Tyura Tam, Kapustin Yar)

CIA/OSI/R-40/62 (amendment), 9 Apr 62 (Tyura Tam)

CIA/OSI/R-129/62, 12 Jun 62 (Leningrad, Sary Shagan)

CIA/OSI/R-141/62, 9 Jul 62 (Leningrad, Sary Shagan)

CIA/OSI/R-149/62, 11 Jul 62 (Leningrad, Sary Shagan)

CIA/DDI/RR/E/R-76/62, 11 Jul 62 (Leningrad)

NPIC PROJECT

JN-57/62

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